UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The following are the speeches delivered on June 12 by the Public Orator, Dr. Sandys, in presenting the three recipients of the degree of Doctor of Science *honoris causâ* :—

(1) SIR CLEMENTS MARKHAM, K.C.B., F.R.S.

Sequitur deinceps Regiae Societatis Geographicae per annos quinquaginta quidem minister indefessus, per duodecim praeses praeclarus, cuius sub ductu Societas illa diu floruit, et non modo Britannorum in doctrinae sedibus honoris locum est adeptus, sed etiam terras remotissimas, et praesertim regionem polo Australi propinquam, explorauit. Idem quot iuuenes rei naualis peritos trans maria longinqua scientiarum finibus proferendis excitauit! Quam feliciter ipse ex intimis Peruuiae penetralibus arborem contra febrium impetus ui salutari praeditam, etiam in Indiam, populi totius cum magno commodo, transtulit! Quot regiones peragrauit, peragratas litterarum lumine illustrauit! Ergo, et sibi ipsi, et collegis suis orbem terrarum totum explorantibus, nemo melius poëtarum Latinorum uerba illa potest arrogare :—

> " Quae regio in terris nostri non plena laboris ! "
> " Viximus insignes inter utrumque "—polum.[1]

(2) COLONEL SIR THOMAS HUNGERFORD HOLDICH, K.C.M.G., K.C.I.E., C.B.

Societatis Geographicae praesidi emerito nemo potest opportunius succedere quam praesidis ipsius uicarius, miles fortissimus, Indiae totius explorator audax, qui praesertim in tellure Russorum imperio contermina, montium arduorum inter ambages, gentium barbararum inter arma, animo intrepido regionis difficillimae, regionis prope inextricabilis, fines designauit. Idem in America Australi inter respublicas duas confines controuersiam magnam de limite communi exortam, populi utriusque non sine magno commodo, terminauit. Is autem qui scientiarum doctor hodie nominabitur, itinerum suorum libris stilo facili et facundo conscriptis, non immerito etiam laudem litterarum est adeptus.

(3) PROF. SIR THOMAS RICHARD FRASER, F.R.S.

In Uniuersitate Edinensi iam per annos triginta materiam medicam est professus uir in remediorum ui et usu inuestigando iamdudum exercitatus. Abhinc annos plus quam quadraginta de magica illa faba, physostigmate uenenoso, disputauit, et propterea Franco-gallorum ab Instituto laurea insigni est coronatus. Quid dicam de pestilentia illa per Indiam quondam grassante, ab hoc uiro per triennium audacter inuestigata? Quid de serpentium ueneno ab eodem fortiter explorato? Quid de atropia et strophantho? In medicina etiam uenena nonnumquam prodesse ne antiquis quidem prorsus ignotum. Talium autem uirorum auxilio disciplina illa, " quondam paucarum scientia herbarum," " in hanc peruenit tam multiplicem uarietatem."[2]

The election of a professor of zoology and comparative anatomy will take place on Tuesday, July 23, at the University Offices, St. Andrew's Street. Candidates for the said professorship are requested to communicate with the Vice-Chancellor on or before Tuesday, July 16.

Prof. Newton has bequeathed to the University his natural history collections and library, together with the cabinets, cases, and apparatus thereto belonging, including all his copyrights, books, pictures, prints, drawings, letters, and papers relating to natural history, to be attached, so far as is convenient, to the department of zoology. He has also left the sum of 1000*l*. to apply the annual income to the keeping up and adding to the library.

The Harkness scholarship in geology and palæontology has been awarded to L. J. Wills, scholar of King's College. The Wiltshire prize in geology and mineralogy is not awarded this year.

The general board recommends that, in place of the present lectureship in physiological and experimental psychology, a university lectureship in the physiology of the senses be established from Michaelmas, 1907, in connection with the special board for biology and geology, and that a university lectureship in experimental psychology be established in connection with the special board for moral science from the same date.

It is proposed to confer the degree of Doctor of Science *honoris causa* upon Prof. W. C. Brögger, University of Christiania; Prof. H. Credner, University of Leipzig; Prof. L. Dollo, Brussels; Prof. A. de Lapparent, Paris; Prof. A. G. Nathorst, Stockholm; and Prof. H. Rosenbusch, Heidelberg, in connection with the centenary of the Geological Society, London, in September next.

OXFORD.—The following is the text of the speech delivered by Prof. Love in presenting Prof. Paul Ehrlich for the degree of D.Sc. *honoris causa* on June 18 :—

Antiquis ea erat medendi ratio ut angores levarent vel varia molestiarum genera minuerent medicamentis usi quæ affectus contrarios excitarent : recentes id propositum habent ut abdita morborum semina iam inolescentia et in vivis medullis concreta deprehendant et exstinguant. Ita non solum morbo quo quisque laboret mederi sed ipsum corpus quasi præsidiis occupare et inexpugnabile facere conantur. In maximo hoc bello quod hodie geritur contra febres varias, velut διφθερίαν quam vocant, contra cancros, vel noxiis seminibus vel ipsius carnis corruptione ortos, nemo melius vel viam munivit vel in acie præliatus est quam Paulus Ehrlich. Victoria quidem nondum reportata est : quamvis multi hostes fusi sint, restant alii mox superandi : huic certe viro summa diligentia et prudentia prædito, salubritatis patrono et præsidi, si quid bene gestum est acceptum referre debemus : huius opera et eorum qui sub eius signis militant novos triumphos reportari posse speramus.

DR. R. K. MCCLUNG, who has been senior demonstrator in physics in McGill University, Montreal, for the past three years, has been appointed to the chair of physics in Mount Allison University in Sackville, New Brunswick, Canada.

THE following recent appointments are announced :—Dr. Kriemler, to be professor of applied mechanics at the Technical College, Stuttgart; Mr. H. Maschke, to be professor, and Mr. L. E. Dickson, to be associate professor, of mathematics at Chicago University; Mr. W. L. Reid, to be professor of mathematics at Haverford College; Dr. Philipp Furtwängler, to be professor of mathematics at the Technical College, Aachen; Dr. Wilhelm Bjerknes, to be professor of mechanics and mathematical physics at Christiania; Dr. Karl Wieghardt, to be professor of mathematics and mechanics at the Technical College, Hanover.

THE Berlin correspondent of the Times reports that the German Colonial Secretary, Herr Dernburg, recently visited Hamburg to inspect the Institute for Tropical Diseases, the Botanical Museum, and the Museum for Ethnology and Anthropology with a view to ascertain whether the city possessed facilities enough for the study of colonial and tropical questions to justify the foundation of a colonial training college. Herr Dernburg decided to recommend the establishment of such an institution, and the courses at the new college are to be open to those who desire to engage in private commercial or industrial enterprise in the German colonies, as well as to Government officials. The new institute will be modelled on the plan of existing German technical colleges. The promoters of the scheme hold that the intercourse between intending officials and young business men will contribute to the benefit of the German colonies. The State of Hamburg will for the present be responsible for the scheme, and, if the results prove satisfactory, the institution will receive official recognition in the form of an Imperial subsidy.

THE King and Queen will visit Bangor on July 9, when the King will lay the foundation stone of the new buildings of the University College of North Wales. The site of the new college, at Penrallt, is at present occupied by the residence of Principal Reichel, and this interesting feature of old Bangor will have to be demolished in order to make way for the buildings. The permanent build-

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[1] Virgil, *Aeneid*, i. 460 ; Propertius, iv. 5 (11), 46.
[2] Seneca, *Ep.* 95, § 15.

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ings fund has now reached a sum that will suffice for the erection of the arts and administrative portions, and this will enable the present college buildings (formerly the Penrhyn Arms Hotel) to be handed over entirely to the requirements of science. Thus, for a time, the college will be conducted on the lines of certain foreign universities, where the faculties of arts, science, law, and medicine are housed in separate buildings. It is hoped, however, that the completion of the new college by the erection of buildings for the faculty of science will not be long delayed. A considerable moral obligation rests on the Government to assist in this matter, more especially in view of the fact that the death duties arising out of the estate of the late Lord Penrhyn, while representing a heavy financial loss to the people of North Wales, would far more than suffice to build and equip the new college.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 23.—"Chemical Reaction between Salts in the Solid State." By E. P. **Perman.** Communicated by Principal E. H. Griffiths, F.R.S.

Experiments have been made on the following pairs of salts:—lead chloride and potassium iodide, mercuric chloride and potassium iodide, sodium carbonate and barium sulphate, sodium sulphate and barium carbonate. The chief points investigated were the effect on certain of these salts of (1) traces of moisture; (2) great pressure; (3) heat.

It was found that reaction always took place unless the salts were very carefully dried, and that the reaction was accelerated by shaking the mixture, and by the application of heat or great pressure; further, that the velocity of the reaction is much influenced by the solubility and volatility of the salts.

The effect of small quantities of some other solvents was also tried. It was found that methyl alcohol caused a reaction between lead chloride and potassium iodide in the same way as water, whilst benzene, chloroform, and ammonia were without result.

Finally, it would appear that reaction between solid salts is of essentially the same nature as that between salts in solution, and it is suggested that the water (or other solvent) present forms a film on the surface of the salts, and that in this film minute quantities of the salts dissolve, and there react. In the absence of an ionising solvent there is no chemical reaction, even when the substances are heated or subjected to great pressure.

Physical Society, May 24.—Prof. J. Perry, F.R.S., president, in the chair.—The measurement of mutual inductance by the aid of a vibration galvanometer: A. **Campbell.** Carey Foster's method of comparing a mutual inductance with a capacity is one of the most convenient. The advantage gained by the use of a *vibration galvanometer* in methods for measuring capacity or inductance led the author to apply it to the Carey Foster and the Hughes-Rayleigh methods. He found it was necessary with alternating currents to modify the Carey Foster method by adding a series resistance in the condenser branch; this gave an additional formula involving the ratio of a mutual and a self-inductance. This modification has been suggested by Rowland. The modified method is convenient, the two adjustments required for a balance being independent, and the result not involving a knowledge of the frequency; the use of the vibration galvanometer is an improvement, making the method independent of the wave-form of the current used. The author discussed vibration galvanometers. They belong to the class of tuned instruments. If the detecting instrument used in a null method (with alternating current) is adjusted so that its natural period is in tune with that of the applied voltage, it will be set into strong resonance and will be enormously increased in sensitivity for this particular frequency, practically ignoring in comparison all the other components of the wave-form. Thus in any method in which the tuned instrument is used, a sine wave-form may be assumed. The author exhibited a vibration galvanometer of another type, having a moving coil controlled by an adjustable bifilar suspension. By adjusting the tension of this the tuning is easily effected. For measuring the frequency to which a tuned instrument is responding, it is convenient to use the Hughes-Rayleigh method. The author showed such an arrangement in which the slide-wire was graduated directly in frequency. The author gave results of tests of a standard mutual inductance of 0·05 henry. The Kirchhoff method with direct deflection on a ballistic galvanometer, of measured time of swing, gave a mean of 0·05014 henry, while the Carey Foster method gave 0·05009 henry; the probable error of the latter was much smaller than that of the older method.—Note on the rate of decay of the active deposit from radium: W. **Wilson** and W. **Makower.** In some experiments in which the ionisation produced by the α rays from radium C was balanced against that produced by the more penetrating β and γ rays, it was found that after a short time these two ionisations were no longer exactly equal, however carefully they had been adjusted to equality at first. A similar effect had been noticed by Brousson, and was attributed to the slowly moving β rays emitted by radium B which is present with the radium C. Since these rays are emitted by radium B, whereas the α and more penetrating β rays are emitted by radium C, it is to be expected that the rate of decay as measured by these two types of radiation will be different. The authors' experiments confirm the view that the observed difference in the rate of decay as measured in the two vessels is due to the slowly moving β rays emitted by radium B.—Apparatus for relay working of long submarine telegraph cables: S. G. **Brown.** This relay system consists of three parts:—(1) the actual relaying device or drum relay; (2) an inductive shunt with closed iron circuit for use across the receiving coil to curb the signals and straighten out the zero; and (3) a method of applying a local current possessing suitable time-lag to the receiving coil to correct the tendency of signals made up of two or more impulses of the same polarity to fall away to zero due to the charging up of the receiving condenser itself.

Faraday Society, May 28.—Prof. A. K. Huntington in the chair.—Contributions to the chemistry of gold: F. H. **Campbell.** Aurous iodide, AuI, was prepared and found to decompose at 25°, according to the equation

$$2\mathrm{AuI} \rightleftarrows 2\mathrm{Au} + \mathrm{I}_2.$$

Since this equation contains only one variable, namely, the iodine, there must be a particular pressure of iodine at which AuI, Au, and I_2 are in equilibrium. This was found to be 0·943 of that of pure iodine; any solution of iodine will therefore act on gold if more than 0·943 saturated, but not if below this strength. When gold is acted on by a solution of KI and iodine, part is converted into insoluble AuI and part dissolves. The experimental results with various solutions agree with the equilibrium equations only when the gold is assumed to enter the complex ion in the monovalent condition, *i.e.* to yield AuI_2 ions. The action $3AuCl = AuCl_3 + 2Au$ was found to occur at ordinary temperatures and in absence of moisture.—Reduction of some oxides and sulphides by means of metallic calcium: Dr. F. Mollwo **Perkin.** The author first referred to the well-known powerful reducing action of aluminium, as, for example, its use in the preparation of chromium, ferrosilicon, and other metals and alloys, and its use in the form of "thermite" for welding purposes. He finds that metallic calcium is a still more powerful reducing agent than aluminium. For example, when molecular proportions of aluminium and ferric oxide are mixed together and ignited by means of a fuse of aluminium and barium peroxide, intense reaction ensues, and continues until all the oxygen has been removed from the ferric oxide, and aluminium oxide and metallic iron produced in its stead. When metallic calcium in the form of fine turnings is mixed with ferric oxide and ignited in a similar manner, the reaction is so intense that the mixture is in large part ejected from the crucible. The reaction can be brought under control by mixing 30 per cent. to 40 per cent. of calcium fluoride or 10 per cent. to 20 per cent. of calcium oxide with the contents of the crucible. Boron can be obtained by igniting a mixture of boron trioxide with the calculated quantity of calcium and 5 per cent. to 10 per cent. of calcium oxide. Attention was

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